## CLAIMS

What is claimed is:

1. A rotary electric motor comprising:

a stator configured in the form of an annular ring of groups of electromagnet poles, the groups substantially equidistantly distributed along the angular extent of the annular ring, each of the groups comprising magnetic material magnetically isolated and separated from the other groups; and

an annular rotor, concentric with an axis of rotation and concentric with the annular stator to form a radial air gap therebetween, comprising a plurality of permanent magnet poles substantially equidistantly distributed with alternating magnetic polarity along the angular extent of the air gap, the permanent magnet poles having a common magnetic return path;

wherein each group of electromagnet poles comprises windings that are switchably energized for driving electromotive interaction between the stator and rotor.

2. A rotary electric motor as recited in claim 1, wherein each stator group comprises no more than a single pair of poles, each pole having a winding configured to form a magnetic polarity opposite to the magnetic polarity of the other pole of the pair, wherein switched energization of the pole pair winding effects reversal of the magnetic polarities of the pole pair.

3. A rotary electric motor as recited in claim 1, further comprising a rotor position sensor, wherein signals for switching energization of the windings are generated in response to the sensor.

4. A rotary electric motor as recited in claim 3, wherein said position sensor comprises a resolver;

and said motor further comprises an encoder for generating said signals.

5. A rotary electric motor as recited in claim 1, wherein the angular distance between poles of each stator group is substantially uniform throughout the periphery of the stator and differs from the angular distance between stator poles of adjacent groups.

6. A rotary electric motor as recited in claim 5, wherein the angular distance between poles of each stator group is independent of the angular distance between adjacent permanent magnet poles of the rotor.

7. A rotary electric motor as recited in claim 6, wherein the angular distance between poles of each stator group is different from the angular distance between adjacent permanent magnet poles of the rotor.

8. A rotary electric motor as recited in claim 1, wherein the stator poles have pole faces extending in substantially equal angular distance along the air gap and the rotor permanent magnet poles have pole faces extending in substantially equal angular distance along the air gap, the angular extent of the stator pole faces being different from the angular extent of the rotor pole faces.

9. A rotary electric motor as recited in claim 8, wherein the stator pole faces are separated by gaps, the gaps between adjacent stator pole faces within each group being substantially equal and different from the gaps between adjacent stator groups.

10. A rotary electric motor as recited in claim 9, wherein the rotor pole faces are separated substantially uniformly by gaps, the gaps between adjacent rotor pole faces being different from the gaps between adjacent stator pole face within a stator group.

11. A rotary electric motor as recited in claim 1, wherein the rotor surrounds the stator.

12. A rotary electric motor as recited in claim 1, wherein the number of stator groups is an odd number and the number of poles within each stator group is an even number.

13. A rotary electric motor as recited in claim 1, wherein each stator group is individually secured in the stator annular ring structure, thereby facilitating independent removal and replacement of an individual stator group and a switched energization circuit component associated therewith.

14. A rotary electric motor as recited in claim 13, wherein said motor further comprises:

a plate member; and

a shaft member located at the axis of rotation;

wherein each of said stator groups is secured to said plate member at a spaced radial distance from the axis of rotation; and

said plate member is attached to said shaft member.

15. A rotary electric motor as recited in claim 14, wherein said spaced radial distance is greater than the radial distance between inner and outer boundary diameters of the stator annular ring.

16. A rotary electric motor as recited in claim 13, wherein said motor further comprises a rotor housing, the rotor annular rotor being mounted within the housing at a spaced radial distance from the axis of rotation, and the rotor housing is journalled for rotation about the shaft through bearings.

17. A rotary electric motor having a stator and a rotor, the motor comprising:

first and second annular ring members concentrically arranged about an axis of rotation and separated from each other by an axial air gap; wherein

said first member comprises groups of electromagnet poles, the groups substantially equidistantly distributed along its annular ring, each of the groups comprising magnetic material magnetically isolated and separated from the other groups;

said second member comprises a plurality of permanent magnet poles substantially equidistantly distributed with alternating magnetic polarity along the air gap, the permanent magnet poles having a common magnetic return path along its annular ring; and

wherein each group of electromagnet poles comprises windings that are switchably energized for driving electromotive interaction between the first and second members in accordance with a preset sequential, non-sequential or random excitation scheme.

18. A rotary direct motor as recited in claim 17, wherein the rotor surrounds the stator.

19. A rotary electric motor as recited in claim 18, wherein the stator comprises said first annular ring member and the rotor comprises said second annular ring member.

20. A rotary electric motor as recited in claim 19, wherein the annular stator comprises an inner boundary at a first radial distance from the axis of rotation and an outer boundary at a second radial distance from the axis of rotation, and the radial distance between the inner and outer boundaries is less than said first radial distance.

21. A rotary electric motor as recited in claim 18, wherein the stator comprises said second annular ring member and the rotor comprises said first annular ring member.